

Appln No. 10/500,939
Pascal Guerrero
Office Action dated February 17, 2006

This listing of claims will replace all prior versions and listing of claims in the application.

LISTING OF CLAIMS

1. (currently amended) A method for controlling the temperature of the gases entering an internal combustion engine (58), comprising:

circulating gases in a liquid/gas heat exchanger (2, 12, 22, 34, 44);

entering of circulated gases post circulation into the internal combustion heat engine (58);

managing the temperature of the gases entering a heat engine (58), using a management device comprising a main loop (52) equipped with a main pump (60) for circulating a heat transfer fluid between the heat engine (58); a main radiator (64) for cooling at high temperature; a secondary loop (54) including a secondary low temperature radiator (78); a liquid/gas radiator (2, 12, 22, 34, 44), and an interconnecting means (76, 86, 106) for circulating the heat transfer fluid in the liquid/gas heat exchanger to heat and/or cool the gases (84) entering the engine (58); and

circulating a high temperature liquid and/or a low temperature liquid in the liquid/gas heat exchanger in order to heat and/or cool the gases (84).

2. (currently amended) The method of claim 1, wherein the heat exchanger is a single single-stage heat exchanger (2, 12) and the heat exchanger has a valve means (4) to circulate either a low temperature liquid, or a high temperature liquid, or a mixture of both liquids, in the heat exchanger (2, 12).

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3. (previously presented) The method of claim 2, wherein the liquid/gas heat exchanger comprises a section (14) through which the engine intake air (15) passes and a section (16) through which a recirculated fraction of the exhaust gases (18) passes.
4. (currently amended) The method of claim 1 wherein the A liquid/gas heat exchanger comprises a high temperature stage (24, 36) in which a high temperature liquid circulates can circulate, and a low temperature stage (26, 38) in which the low temperature liquid can circulate, and ~~an~~ the interconnecting means (76, 86, 106) ~~for controlling~~ controls the circulation of the high temperature and low temperature liquids.
5. (previously presented) The method of claim 4, wherein the liquid/gas heat exchanger high temperature stage (36) comprises a section (40) through which the engine intake air (41) passes and a section (42) through which a recirculated fraction (43) of the exhaust gases passes.
6. (previously presented) The method of claim 5, wherein the low temperature stage (38) also comprises a section (42) through which a recirculated fraction (43) of the exhaust gases passes.

7-11. (cancelled)

12. (previously presented) The method of claim 1, wherein the internal combustion engine is part of an automotive vehicle.
13. (previously presented) The method of claim 4, wherein the internal combustion engine is part of an automotive vehicle.
14. (currently amended) An automotive vehicle having a management device ~~as in claim 7, for managing the temperature of the gases entering the heat engine (58), using a management comprising a main loop (52) equipped with a main pump (60) for circulating a heat transfer fluid between the~~

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heat engine (58); a main radiator (64) for cooling at high temperature; a secondary loop (54) including a secondary low temperature radiator (78); a liquid/gas radiator (2, 12, 22, 34, 44), and an interconnecting means (76, 86, 106) for circulating the heat transfer fluid in the liquid/gas heat exchanger to heat and/or cool the gases (84) entering the engine (58).

15. (currently amended) An automotive vehicle having a management device as in claim 8. 14, further comprising a single-stage heat exchanger (2, 12) and a three-way valve (76) for circulating either the hot heat transfer fluid directly leaving the internal combustion engine (58) in the heat exchanger, or a cold heat transfer fluid leaving the low temperature radiator (78), or an adequate mixture of both fluids.
16. (currently amended) An automotive vehicle having a management device as in claim 9. 14, further comprising a single-stage heat exchanger (2, 12) and a branch on the high temperature fluid circuit equipped with an additional circulating pump (86), a valve (76) for circulating either the hot heat transfer fluid directly leaving the heat engine (58), or the cold heat transfer fluid cooled in the low temperature radiator (78), or a mixture of both fluids.
17. (currently amended) An automotive vehicle having a management device as in claim 10. 14, further comprising a two-stage heat exchanger (22, 34, 44) having a high temperature stage and a low temperature stage, a three-way valve (76) for circulating the hot heat transfer fluid leaving the internal combustion engine (58) in the high temperature stage, and a cold heat transfer fluid cooled in the low temperature radiator (68) in the low temperature stage of the heat exchanger.
18. (currently amended) An automotive vehicle having a management device as in claim 11. 14, further comprising a two-stage heat exchanger (22, 34, 44) having a high temperature stage and a low temperature stage, a two-way valve (106) for circulating the hot heat transfer fluid directly

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leaving the internal combustion engine (58) in the high temperature stage of the heat exchanger (22, 34, 44), and an additional loop equipped with a circulating pump (86) for circulating the cold heat transfer fluid cooled in the low temperature radiator (78) in the low temperature stage of the heat exchanger (22, 34, 44).